



(3/3)

This is an English translation of the priority
Japanese Patent Application No. 00-083222
filed on March 21, 2000.



[Name of Document] Patent Application

[Reference Number] 99087700

[Submission Date] March 21, 2000

[Destination] Commissioner Patent Office

[International Patent Classification] B41L 19/00

[Title of the Invention]

System and Method for Providing Output

[Number of Claims] 3

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[Designation of Fee]

[Ledger No. for Prepayment] 014731

[Amount of Payment] 21,000 yen

[List of Submitted Documents]

[Document Name] Specification 1

[Document Name] Drawings 1

[Document Name] Abstract 1

[Number of General Power of Attorney] 9505720

[Number of General Power of Attorney] 9809444

[Necessity of Proofs] Necessary

[Document Name] Specification

[Title of the Invention] SYSTEM AND METHOD FOR PROVIDING OUTPUT

[Claims]

[Claim 1]

An output providing system for providing a tangible output in response to a request from a customer, the system comprising:

a wireless data transmitter capable of generating and transmitting output-related data;

a data transfer device capable of receiving and transmitting the data transmitted from the wireless data transmitter;

a plurality of data receivers capable of receiving the data transmitted from the data transfer device; and

an output producing device provided for each of the plurality of data receivers for producing the output based on the data received by each of the plurality of data receivers,

wherein the wireless data transmitter is capable of generating and transmitting destination designating data in addition to the output-related data, and the data transfer device transmits the output-related data to one of the plurality of data receivers designated by the destination designating data.

[Claim 2]

The output providing system according to claim 1, wherein the plurality of data receivers are wireless receivers.

[Claim 3]

An output providing method for providing a tangible output in response to a request from a customer, the method comprising the steps of:

generating output-related data and destination designating data;

transmitting over the air the output-related data and the destination designating data to a data transfer device;

receiving by the data transfer device the output-related data and the destination designating data transmitted over the air and transmitting over the air the output-related data to one of a plurality of data receivers according to the received destination designating data;

receiving by the one of the plurality of the data receivers the output-related data transmitted over the air from the data transfer device; and

producing the output, based on the received data, using an output producing device provided for each of the plurality of data receivers.

[Detailed Description of the Invention]

[0001]

[Technical Field]

The present invention relates to a system and method for providing a tangible output, such as a stamp and a name card, in response to a request from a customer.

[0002]

[Prior Art]

In recent years, amusement facilities, such as a game arcade and an amusement park, are often provided with a name card producing device that produces a name card on which personal information including a customer's name and address is printed, a stamp producing device that produces a stamp by engraving an image on a stamp material based on personal information, and a sticker producing device that produces a peel-off sticker based on image data obtained by taking a picture of a customer's face. Such devices are increasingly popular because, in many of such devices, an original cartoon character of the amusement park or a commonly popular cartoon character can be printed or engraved together

with the personal information, and because a name card and a stamp are provided in a short time and at low cost.

[0003]

[Problems to be Solved in the Invention]

Under present circumstances, when a customer uses the above-described card or stamp producing device, the customer must go to a site where a desired device is installed and operate the device to enter data, or fill out a predetermined order form and submit it to an administrator of the device.

[0004]

However, going to the installation site of a desired device is troublesome for the customer. In addition, it is relatively time-consuming to enter data into the desired device or fill out an order form. When many customers queue up for the desired device, they must wait for their own turn. Thus, a drawback of such a device is that it takes a very long time to get a desired name card or the like. Another drawback of such a system is that when the customer fills out an order form, the device manager must take the trouble to enter data based on the items entered in the order form.

[0005]

Accordingly, it is an object of the present invention to provide an output providing system and method that enables a customer to order a tangible output, such as a name card or a stamp, at less expense in time and trouble and that can save an output provider time and trouble.

[0006]

[Means for Solving the Problems]

To achieve the above object, an output providing system according to claim 1 includes, in order to provide a tangible output in response to a request from a customer, a wireless data transmitter capable of generating and transmitting output-related data, a data

transfer device capable of receiving and transmitting the data transmitted from the wireless data transmitter, a plurality of data receivers capable of receiving the data transmitted from the data transfer device, and an output producing device provided for each of the plurality of data receivers for producing the output based on the data received by each of the plurality of data receivers. The wireless data transmitter is capable of generating and transmitting destination designating data in addition to the output-related data, and the data transfer device transmits the output-related data to one of the plurality of data receivers designated by the destination designating data.

[0007]

An output providing method according to claim 3 includes, in order to provide a tangible output in response to a request from a customer, the steps of generating output-related data and destination designating data, transmitting over the air the output-related data and the destination designating data, receiving by a data transfer device the output-related data and the destination designating data transmitted over the air and transmitting over the air the output-related data to one of a plurality of data receivers according to the received destination designating data, receiving by the one of the plurality of the data receivers the output-related data transmitted over the air from the data transfer device, and producing the output, based on the received data, using an output producing device provided for each of the plurality of data receivers.

[0008]

According to claims 1 and 3, when a customer wants a desired output to be produced, all the customer has to do is to send desired data using a personal wireless data transmitter without taking the trouble to go to the

installation site of the output producing device and enter data to be indicated in the output or fill out a form. Accordingly, the time and trouble taken by the customer to order an output can be substantially saved. Also, production of an output based on the data transmitted from the customer substantially saves an output provider the trouble of entering data and enables the stamp provider to smoothly receive orders from distant consumers.

[0009]

The customer can select any one of a plurality of data receivers as a destination of data transmission. When the customer selects the most conveniently located data receiver, the customer can get an output at a location relatively near him/her without the trouble of going to a distant destination.

[0010]

Customer orders are centralized in a single data transfer device. This allows the customer to just send data to a single data transfer device, without the trouble of selecting, as required in the system where data is sent to individual data receivers, one of a plurality of data receivers as a recipient. As a result, erroneously destined data transmission is prevented. Also, order management can be performed only by the data transfer device.

[0011]

Because the output-related data is generated and transmitted using a wireless data transmitter, the customer can order an output conveniently from various locations, at home and away from home in his/her spare time.

[0012]

In the output providing system of claim 2, the data receiver is a wireless receiver. According to claim 2, the installation site of the data receiver can be

selected more freely and the environment for the data receiver to receive data can be built at a lower cost.

[0013]

[Embodiment]

A Preferred embodiment of the invention will now be described with reference to the accompanying drawings.

[0014]

According to the embodiment of the invention, a stamp providing system is provided which produces a stamp from a thermoplastic porous material in response to a request from a customer. Referring now to FIG. 1, a general configuration of the stamp providing system according to the embodiment will be described. FIG. 1 is a schematic block diagram of the stamp providing system according to the embodiment.

[0015]

In the stamp providing system 1 shown in FIG. 1, a stamp producing device 19a or 19b located distant from a number of consumers (customers) (only two consumers 11a, 11b are shown here by way of example) produces a stamp 20, based on stamp producing data transmitted over the air from cellular phones 12a, 12b, which are portable wireless data receivers/transmitters owned by the respective consumers. The cellular phones 12a, 12b used in this embodiment have, in addition to a function of receiving/transmitting voice as digital (or analog) signals, a function of receiving/transmitting text data as code data from/to other computers and cellular phones (for example, a message receiving/transmitting function and an e-mail receiving/transmitting function using the Internet, which are provided by each cellular phone company).

[0016]

Text data sent from the cellular phones 12a, 12b is sent to a host computer 18 in the form of e-mail. As will be described later, the text data contains data to

be engraved on a stamp material of the stamp 20 as well as stamp production site designating data. E-mail transmitted over the air as digital signals from the cellular phone 12a, which is located within a territory of a base station 13a shared by the host computer 18, is received, via the base station 13a, by the cellular phone 15 connected to the host computer 18. On the other hand, e-mail transmitted over the air as digital signals from the cellular phone 12b, which is located within a territory of a base station 13b not shared by the host computer 18, is received by the cellular phone 15 via the base station 13b, a cellular phone switching station 14, and the base station 13a.

[0017]

The host computer 18, as will be described in detail later, transfers the received e-mail by the cellular phone 15, based on the contents thereof, to one of a plurality of cellular phones (only two cellular phones 16a, 16b are shown in this embodiment by way of example). Stamp producing devices 19a, 19b are connected to the cellular phones 16a, 16b, via output terminals 17a, 17b, respectively. The output terminals 17a, 17b, as will be described in detail later, edit stamp face data based on the contents of the received e-mail. The edited data is sent to the stamp producing device 19a or 19b. The stamp producing device 19a or 19b, as described below, optically engraves an image on a stamp material based on the data sent from the output terminal 17a or 17b and produces the stamp 20 having a desired stamp face.

[0018]

In this embodiment, each cellular phone 12a, 12b constitutes a wireless data transmitter, the cellular phone 15 and the host computer 18 constitute a data transfer device, and the cellular phones 16a, 16b constitute data receivers, and the output terminals 17a,

17b and the stamp producing devices 19a, 19b constitute output producing devices.

[0019]

Referring now to FIGS. 2 and 3, the structure of the stamp producing device 19a will be described (the stamp producing device 19b has the same structure). FIG. 2 is a general perspective view of the stamp producing device 19a shown in FIG. 1, and FIG. 3 is a general cross-sectional view thereof. The stamp producing device 19a has a film magazine 24 removable from a device body 22 and storing a plurality of transparent original films 23, a supply port 25 disposed near the film magazine 24 for supplying cut sheets CS for stamp ID labels, a print unit 27 provided with a printhead 26, a stamp unit 29 for forming a stamp face, based on a printed original film 23, on a stamp material (not shown) disposed at a lower surface of the stamp body 28, a stamp storage 30 for storing the stamp body 28 during stamp face forming, and a discharge port 31 disposed near the stamp unit 29 in the device body 2 for discharging the cut sheets CS and the original films 23.

[0020]

A head holder unit 32, provided on an upper surface of the print unit 27, has at its lower side a thermal head 26 and is upwardly pivotable about a shaft 33, thereby allowing maintenance of the inside of the device. A leading edge of the uppermost original film 23 on the film magazine 24 is pressed into contact with a supply roller 34. When the supply roller 34 is rotated in this state, the original film 23 is properly fed to the print unit 27. The cut sheet CS is fed to a position printable by the thermal head 26 by a pair of feed rollers 35, 36 immediately behind the supply port 25, a sheet guide 37 provided immediately behind the supply port 25 so as to be bent toward the thermal head 26, and a guide rail 38.

[0021]

The print unit 27 is provided with a supply roll 40 and a take-up roll 40b of thermal transfer ribbon 39 covered with wax base ink. A platen 42 is provided below the thermal head 26 disposed at the lower side of the head holder unit 32. Provided below the supply roll 40a are the guide rail 38 for guiding the original film 23 and the cut sheet CS to a space between the thermal head 26 and the platen 42, and a presser guide 43 for preventing the original film 23 and the cut sheet CS from floating while being fed. In addition, provided downstream of the thermal head 26 are a transport guide 44 and a pair of supply rollers 45.

[0022]

A light-emitting unit (HU) 49 provided with a xenon tube 48 enclosed by a reflector box 47 is removably provided below the stamp unit 29. The light-emitting unit 49 with a stage 50 for holding thereon the stamp body 28 is removable from the stamp producing device 19a by upwardly sliding a slide lever 51. The stamp unit 29 is also provided with a top cover 52 and a front top cover 53, which are opened/closed for replacement of the stamp body 28.

[0023]

The stamp producing device 19a is connected to the output terminal 17a via a cable and executes, under the control of the output terminal 17a, various operations, such as printing a positive image on the original film 23, printing an ID label on the cut sheet CS, and engraving an image on a stamp material based on the original film 23 with a positive image printed thereon.

[0024]

More specifically, the thermal head 26 prints a positive image composed of predetermined letters or the like on the original film 23, which has been fed from the film magazine 24 to the print unit 27, and the printed original film 23 is fed to the stamp unit 29. Then the

light-emitting unit 49 irradiates the stamp material disposed under the stamp body 28 with light through the original film 23 to engrave the image on the stamp material. In this way, a series of stamp producing operations by the stamp producing device 19a is completed.

[0025]

For printing on the cut sheet CS, a positive image including letters and graphics is printed by the thermal head 26 on the cut sheet CS fed from the supply port 25, instead of the original film 23, and the printed cut sheet CS is discharged from the discharge port 31. The cut sheet CS may be pasted to the stamp body 28 as an ID label.

[0026]

The structure of a stamp material disposed under the stamp body 28 will now be described. The stamp material used in this embodiment has a double-layer structure, as disclosed in Japanese Laid-Open Patent Publication No. 11-78191, which belongs to the applicant of the present invention. The lower layer is made of a soft porous resin (such as urethane resin) in which a light energy-absorbing material, such as carbon black, is dispersed, and the upper layer is made of a hard porous resin (such as polyvinyl formal) in which ink is stored and to which a uniform pressure is applied.

[0027]

Upon selective irradiation of such a stamp material, when it is compressed, with light via the transparent (positive) original film with a positive image printed thereon, a portion in the lower layer, which corresponds to a transparent portion of the original film, is melted by heat generated from the light energy-absorbing material and then hardened and sealed as an ink impermeable portion. On the other hand, a portion in the lower layer corresponding to a printed portion of the

original film is not irradiated with light nor melted/hardened by heat transmitted from the printed portion, and remains unsealed corresponding to the letters or the like on the original film. As a result, a stamp having, on the lower surface of the stamp material, a desired pattern composed of a sealed portion (not to be printed) and an unsealed portion (to be printed) is formed.

[0028]

Referring now to FIG. 4, a control system of the stamp providing system 1 according to the embodiment will be described. FIG. 4 is a block diagram showing a control system of the stamp providing system 1. In FIG. 4, only each one (cellular phone 12a, output terminal 17a, and stamp producing device 19a) of a number of cellular phones, output terminals, and stamp producing devices usable in the stamp providing system according to the embodiment is representatively shown. Base stations and switching stations are omitted from the figure.

[0029]

As shown in FIG. 4, the cellular phone 12a has a CPU 61, a ROM 62, a RAM 63, a DSP (digital signal processor) 64, a wireless unit controller 65, and an I/O interface 66. These devices are connected to each other using a bus 67. The ROM 62 is a rewritable nonvolatile solid-state memory, such as a flash memory, for storing a cellular phone operation program, a kana-kanji conversion program, and other programs. The RAM 63 is a volatile solid-state memory for storing text data and messages composed by a consumer.

[0030]

The DSP 64 is a voice processor connected to a microphone 68 and a speaker 69 via an A/D and D/A converters (not shown). The wireless unit controller 65 controls operation of a wireless unit 70 connected thereto based on signals from the CPU 61. The wireless

unit 70 transmits over the air desired voice data and text data, as digital signals, to a base station via an antenna 71. Conversely, the wireless unit 70 is also used for receiving data transmitted from the base station via the antenna 71.

[0031]

Connected to the I/O interface 66 are an operation unit 72 including numeral keys and a call key, and a display 73 on which numerals and letters inputted from the operation unit 72 or received by the wireless unit 70 are displayed. By operating the operation unit 72, an operator of the cellular phone 12a can create an arbitrary letter string including kana, kanji, numerals, and symbols. Then data of the created letter string as well as an identifier used for identifying an individual cellular phone (for example, a phone number of the cellular phone 12) is transmitted to the host computer 18 via the base station 13.

[0032]

The output terminal 17a has a CPU 81, a ROM 82, a RAM 83 and an I/O interface 84, and these devices are connected to each other using a bus 85. Connected to the I/O interface 84 are a hard disk 86, a keyboard 87, a display 88, and a cellular phone connection adapter 89. The cellular phone 16a is connected to the cellular phone connection adapter 89 so as to enable data reception/transmission by/from the output terminal 17a via the base station 13a.

[0033]

The display 88 displays a screen for editing e-mail received from one or more cellular phones, a stamp face generating screen including a stamp face image to be engraved by the stamp producing device 19a, and other screens. The keyboard 87 is connected as part of an input device and, other than the keyboard 87, a pointing device such as a mouse may be connected.

[0034]

The hard disk 86 magnetically stores a program for loading mail from the cellular phone and a program for editing mail received and loaded from the cellular phone 16a, a program for exchanging data with the stamp producing device 19a, and other programs. The RAM 83 temporarily stores programs read from the hard disk 86, received mail, and data entered from the keyboard 87. The RAM 83, as will be described later, is provided with name buffers 0-2, address buffers 0-2, a stamp type buffer, a delivery point buffer, and a memory area for various pointers.

[0035]

Because the hardware configuration of the host computer 18 to which the cellular phone 15 is connected is substantially the same as that of the above-described output terminal 17a, a detailed description thereof is omitted here. The host computer 18 stores, in addition to a mail loading program, a program for unloading mail to the cellular phone for mail transmission therefrom, and also stores, as will be described later, a mail transfer program, instead of a mail editing program.

[0036]

The stamp producing device 19a is provided with a CPU 91, a ROM 92, a RAM 93, and an I/O interface 94. These devices are connected to each other using a bus 95. The I/O interface 94 is connected to the I/O interface 84 of the output terminal 17a via a cable or the like. This allows the stamp producing device 19a to retrieve stamp face data edited according to the embodiment from the output terminal 17a. Also connected to the I/O interface 94 are a head driving circuit 96 and a motor driving circuit 97. A thermal head 26 is connected to the head driving circuit 96, while motors 98 variously located at the stamp producing device 19a for driving the thermal

head 26 and various rollers are connected to the motor driving circuit 97.

[0037]

The ROM 92 stores a control program for controlling the entire operation of the stamp producing device 19a. The RAM 93 stores stamp producing data provided from the output terminal 17a. The RAM 93 is provided with an image buffer for storing dot matrix data generated based on the stamp producing data.

[0038]

The CPU 91 controls the head driving circuit 96 and the motor driving circuit 97 based on the control program stored in the ROM 92 and the dot matrix data stored in the image buffer of the RAM 93. Thereby a desired stamp face image is printed by the thermal head 26 on the original film 23 or the cut sheet CS, and the original film 23 is used for engraving the face image on a stamp material.

[0039]

Referring now to FIGS. 5 through 22, stamp providing steps in the stamp providing system 1 according to the embodiment will be described. FIG. 5 is a main flowchart showing steps for providing a stamp according to the embodiment. FIG. 6 is a flowchart showing an e-mail transfer process in the host computer 18. FIG. 7 is a flowchart showing an initialization subroutine in the e-mail transfer process of FIG. 6. FIG. 8 is a flowchart showing a delivery point retrieving subroutine in the e-mail transfer process of FIG. 6. FIG. 9 is a flowchart showing a e-mail transfer subroutine in the e-mail transfer process of FIG. 6.

[0040]

FIG. 10 is a flowchart showing an e-mail editing process in the output terminals 17a, 17b. FIG. 11 is a flowchart of an initialization subroutine in the e-mail editing process of FIG. 10. FIG. 12 is a flowchart of a

stamp type retrieving subroutine in the e-mail editing process of FIG. 10. FIG. 13 is a flowchart of a name retrieving subroutine in the e-mail editing process of FIG. 10. FIG. 14 is a flowchart of an address retrieving subroutine in the e-mail editing process of FIG. 10. FIG. 16 is a flowchart of a buffer laying-out subroutine in the e-mail editing process of FIG. 10.

[0041]

FIG. 17 shows an example of a brochure to be supplied previously to consumers. FIG. 18 shows an example of transmission data displayed on the display of the cellular phone. FIG. 19 shows a screen of the mail editing software displayed on the display of the host computer 18. FIG. 20 shows a difference, in name and address buffer layouts, between the two types of stamp face designs. FIG. 21 shows an example of a stamp face layout produced according to the embodiment. FIG. 22 is an external perspective view of a stamp produced according to the embodiment.

[0042]

First, in step S1, consumers 11a, 11b operate the operation unit 72 of their respective cellular phones 12a, 12b to create e-mail containing text data for a desired stamp to be produced. The e-mail needs to be composed by following a predetermined rule to facilitate editing by the host computer 18 and the output terminals 17a, 17b. The rule may be to enter a plurality of entry items by delimiting each entry item by a predetermined symbol (for example, a semicolon (;)). It is preferable to previously supply a brochure 101, as shown in FIG. 17, to consumers to notify them of such an e-mail composing rule.

[0043]

In this embodiment, two entry items, for example, a name and an address (of either a consumer who operates a cellular phone or another person) are provided, and these

two entry items are engraved based on a design selected by the consumer from two types of designs featuring different cartoon characters. In this embodiment, a delivery point of the stamp 20 can be selected also by the consumers 11a, 11b. In this embodiment, the stamp delivery point can be arbitrarily selected from two locations (for example, "1=exit" and "2=front of Ferris wheel"). Thus, the e-mail composed in this embodiment contains four entry items, namely, the stamp type, entry item 1 (for example, a name), entry item 2 (for example, an address), and a stamp delivery point.

[0044]

Accordingly, in the brochure 101 shown in FIG. 17, the e-mail composing rule, two types of stamp face designs, delivery points and their ID numbers, an exemplary entry of e-mail, a stamp face sample produced based on the e-mail, and a phone number (or e-mail address) of the cellular phone 15 as an e-mail recipient are printed. The contents of the composed e-mail are stored in the RAM 63 as text code data and displayed, as shown in FIG. 18, on the display 73 of the cellular phone 12a.

[0045]

Then in step S2, the consumer 11a presses a mail transmission button of the cellular phone 12a to transmit the e-mail composed in step S1 to the cellular phone 15. At this time, the cellular phones 12a, 12b must be located within a service area covered by the cellular phone service company. During composition of e-mail in step S1, however, the cellular phones are not necessarily required to be located within the service area, and the consumer, if he/she has a cellular phone, can compose e-mail for ordering a stamp at anytime and anywhere.

[0046]

Then in step S3, the cellular phone 15 receives the e-mail transmitted from the cellular phones 12a, 12b.

The e-mail received by the cellular phone 15 is loaded into the host computer 18 using the mail loading program. The loaded e-mail is stored in the RAM of the host computer 18. Each piece of e-mail received by the host computer 18 preferably includes, in its header, text code data representing the e-mail sender's cellular phone number, other than text code data representing the stamp type, name, address, and delivery point entered in step S1. The host computer 18 and the output terminals 17a, 17b, if provided with the e-mail sender's cellular phone number, are enabled to perform mail management using a unique cellular phone number and proceed with the subsequent processes smoothly. Also, this prevents a wrong stamp from being delivered later to the consumer. Consumer identifying information such as the cellular phone number may be entered in step S1 by the consumer.

[0047]

In step S3, mail for acknowledging receipt of mail or for notifying of the time of completion of a stamp estimated from the order situations may be returned to the cellular phones 12a, 12b of the consumers 11a, 11b. This obviates the need for the consumers 11a, 11b to wait for the stamp 20 at the place of delivery.

[0048]

Then in step S4, the e-mail loaded into the host computer 18 in step S3 is transferred, as described below, to either of the cellular phones 16a or 16b connected to the output terminals 17a, 17b, respectively, using the mail transfer software and the mail unloading software. As shown in FIG. 6, the mail transfer process includes three steps, namely, initialization (step S41), retrieval of delivery point (step S42), and e-mail transfer to delivery point (step S43). These steps will be described with reference to FIGS. 7 through 9.

[0049]

In the initialization step (step S41), as shown in the step S410 of FIG. 7, a read pointer stored in the RAM of the host computer 18 for indicating a mail read point is moved to the end of the body of the mail to be edited.
[0050]

In the delivery point retrieving step (step S42), the contents of the delivery point buffer in the RAM are cleared, as shown in FIG. 8. Then in step S421, a delivery point buffer write pointer that indicates a data write point in the delivery point buffer is initialized. Then in step S422, the text code data at a point indicated by the read pointer is retrieved from the body of the mail. Then it is determined, in step S423, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.
[0051]

When the text code is indicative of a delimiting symbol (S423: YES), control goes to step S429 on the assumption that the delivery point data has already been retrieved. In step S429, it is determined whether the data retrieved and stored in the delivery point buffer is data representing the delivery point ("1" or "2" in this embodiment). As a result, when the data stored in the delivery point buffer is the data representing the delivery point (S429: YES), this subroutine is completed on the assumption that the data representing the delivery point has been correctly retrieved. When the data stored in the delivery point buffer is not the data representing the delivery point (S429: NO), control goes to step S425, where error handling is performed.

[0052]

On the other hand, when the text code is not indicative of a delimiting symbol (S423: NO), control goes to step S424 on the assumption that the delivery point has not yet been retrieved. In step S424, it is determined whether the read pointer is at the head of the

mail. When the read pointer is determined to be at the head of the mail (S424: YES), control goes to step S425, where error handling is performed.

[0053]

When the read pointer is determined not to be at the head of the mail (S424: NO), the text data retrieved in step S422 is written into the delivery point buffer in step S426. Then in the step S427 the read pointer is decremented by one and, in step S428, the delivery point buffer write pointer is decremented by one. After that, control returns to step S422. By repeating these steps, text data representing the delivery point ("1" or "2" in this embodiment) is written into the delivery point buffer in the RAM of the host computer 18.

[0054]

Then in the step of mail transfer to the delivery point (step S43), as shown in FIG. 9, it is determined, in step S430, whether "1" is contained in the delivery point buffer in the RAM. When "1" is contained (S430: YES), control goes to step S431, where data is transmitted to the cellular phone 15 using the mail unloading software so that the received e-mail is transferred to the destined cellular phone 16a (at the "exit" in this embodiment), which is associated with the delivery point "1". This data has the same body as that of the data transmitted from the cellular phone 12a or 12b, and contains e-mail destined for the cellular phone 16a. When "2" is contained in the delivery point buffer (S430: NO), control goes to step S432, where data is transmitted to the cellular phone 15 using the mail unloading software so that the received e-mail is transferred to the destined cellular phone 16b (in "front of Ferris wheel" in this embodiment), which is associated with the delivery point "2". This data has the same body as that of the data transmitted from the cellular phone

12a or 12b, and contains e-mail destined for the cellular phone 16b.

[0055]

Then in step S5, the cellular phone 15 transmits the e-mail received from the host computer 18 to the designated cellular phone 16a or 16b, via the base station 13a, (the switching station 14, and the base station 13b). In step S6, the cellular phone 16a or 16b receives the transferred e-mail and stores the e-mail in its RAM 63.

[0056]

Then in step S7, the output terminal 17a or 17b loads, using the mail loading program installed therein, the e-mail from the cellular phone 16a or 16b and stores the e-mail in its RAM 83.

[0057]

Then in step S8, the mail editing software is started to select mail to be edited from a list of mail (FIG. 19) stored in the RAM 83 of the output terminal 17a or 17b. The selected mail is processed using the mail editing software as described below. The mail editing process, as shown in FIG. 10, includes six steps, namely, initialization (step S81), retrieval of stamp type (step S82), retrieval of name (step S83), retrieval of address (step S84), retrieval of delivery point (step S85), and buffer layout (step S86). These steps will be described with reference to FIGS. 1 through 16.

[0058]

In the initialization step (step S81), as shown in step S810 of FIG. 11, a read pointer stored in the RAM 83 of the output terminal 17a or 17b for indicating a mail read point is moved to the head of the body of the mail to be edited.

[0059]

In the stamp type retrieving step (step S82), the contents of the stamp type buffer in the RAM 83 are

cleared in step S820, as shown in FIG. 12. Then in step S821, a stamp type buffer write pointer for indicating a data write point in the stamp type buffer is initialized. Then in step S822, the text code data at a point indicated by the read pointer is retrieved from the body of the mail. Then it is determined, in step 823, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.

[0060]

When the text code is indicative of a delimiting symbol (S823: YES), control goes to step S824 on the assumption that the stamp type data has already been retrieved. In step S824, it is determined whether the data retrieved and stored in the stamp type buffer is data representing the stamp type ("1" or "2" in this embodiment). As a result, when the data stored in the stamp type buffer is the data representing the stamp type (S824: YES), control goes to step S8241 on the assumption that the data representing the stamp type has been correctly retrieved, and the read pointer is incremented by one and this subroutine is completed. When the data stored in the stamp type buffer is not the data representing the stamp type (S824: NO), control goes to step S826, where error handling is performed.

[0061]

On the other hand, when the text code is not indicative of a delimiting symbol (S823: NO), control goes to step S825 on the assumption that the stamp type has not yet been retrieved. In step S825, it is determined whether the text code retrieved in step S822 is a code suffixed on the body of the mail and indicative of the end of the body of the mail (or whether retrieval of the text code was failed in step S822). When the text code is determined to be a code indicative of the end of the body of the mail (S825: YES), control goes to step S826, where error handling is performed.

[0062]

When the text code is determined not to be a code indicative of the end of the body of the mail, (S825: NO), the text data retrieved in step S822 is written into the stamp type buffer. Then in the step S828, the read pointer is incremented by one and, in step S829, the stamp type buffer write pointer is incremented by one. After that, control returns to step S822. By repeating these steps, text data representing the stamp type ("1" or "2" in this embodiment) is written into the stamp type buffer in the RAM 83 of the output terminal 17a or 17b.

[0063]

In the name retrieving step (step S83), the contents of the name buffer 0 in the RAM 83 are cleared in step S830, as shown in FIG. 13. Then in step S831, a name buffer 0 write pointer for indicating a data write point in the name buffer 0 is initialized. Then in step S832, the text code data at a point indicated by the read pointer is retrieved from the body of the mail. Then it is determined, in step 833, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.

[0064]

When the text code is indicative of a delimiting symbol (S833: YES), control goes to step S834 on the assumption that the name data has already been retrieved. In step S834, the read pointer is incremented by one and this subroutine is completed. On the other hand, when the text code is not indicative of a delimiting symbol (S833: NO), control goes to step S835 on the assumption that the name data has not yet been retrieved. In step S835, it is determined whether the text code retrieved in step S832 is a code suffixed on the body of the mail and indicative of the end of the body of the mail (or whether retrieval of the text code was failed in step S832). When the text code is determined to be a code indicative

of the end of the body of the mail (S835: YES), control goes to step S836, where error handling is performed.
[0065]

When the text code is determined not to be a code indicative of the end of the body of the mail (S835: NO), the text data retrieved in step S832 is written into the name buffer 0. Then in the step S838, the read pointer is incremented by one and, in step S839, the name buffer 0 write pointer is incremented by one. After that, control returns to step S832. By repeating these steps, text data representing the name desired by the consumer to be engraved is written into the name buffer 0 in the RAM 83 of the output terminal 17a or 17b.
[0066]

In the address retrieving step (step S84), the contents of the address buffer 0 in the RAM 83 are cleared in step S840, as shown in FIG. 14. Then in step S841, an address buffer 0 write pointer for indicating a data write point in the address buffer 0 is initialized. Then in step S842, the text code data at a point indicated by the read pointer is retrieved from the body of the mail. Then it is determined, in step 843, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.
[0067]

When the text code is indicative of a delimiting symbol (S843: YES), control goes to step S844 on the assumption that the address data has already been retrieved. In step S844, the read pointer is incremented by one and this subroutine is completed. When the text code is not indicative of a delimiting symbol (S843: NO), control goes to step S845 on the assumption that the address data has not yet been retrieved.
[0068]

In step S845, it is determined whether the text code is a code suffixed on the body of the mail and indicative

of the end of the body of the mail (or whether retrieval of the text code was failed in step S842). When the text code is determined to be a code indicative of the end of the body of the mail (S845: YES), control goes to step S846, where error handling is performed.

[0069]

When the text code is determined not to be a code indicative of the end of the body of the mail (S845: NO), the text data retrieved in step S842 is written into the address buffer 0 in step S847. Then in the step S848, the read pointer is incremented by one and, in step S849, the address buffer 0 write pointer is incremented by one. After that, control returns to step S842. By repeating these steps, text data representing the address desired by the consumer to be engraved is written into the address buffer 0 in the RAM 83 of the output terminal 17a or 17b.

[0070]

Then in the delivery point retrieving step (step S85), the contents of the delivery point buffer in the RAM 83 are cleared in step S850, as shown in FIG. 15. Then in step S851, a delivery point write pointer for indicating a data write point in the delivery point buffer is initialized. Then in step S852, the text code data at a point indicated by the read pointer is retrieved from the body of the mail.

[0071]

Then in step S858, it is determined whether the text code is a code suffixed on the body of the mail and indicative of the end of the main body of the mail (or whether retrieval of the text code was failed in step S852). When the text code is determined to be a code indicative of the end of the body of the mail (S853: YES), this subroutine is completed on the assumption that the delivery point data has already been retrieved.

[0072]

When the text code is determined not to be a code indicative of the end of the body of the mail (S853: NO), the text data retrieved in step S852 is written into the delivery point buffer in step S854. Then in the step S855, the read pointer is incremented by one and, in step S856, the delivery point buffer write pointer is incremented by one. After that, control returns to step S852. By repeating these steps, text data representing the delivery point desired by the consumer is written into the delivery point buffer into the RAM 83 of the output terminal 17a or 17b.

[0073]

Then in the buffer laying-out step (step S86), it is determined whether "1" or "2" is written into the stamp type buffer in the RAM 83 of the output terminal 17a or 17b. When the stamp type is "1" (S860: YES), the name buffer 1 and the address buffer 1 in the RAM 83 are cleared in step S861. Then the contents of the name buffer 0 are written into the name buffer 1 in step S862, and the contents of the address buffer 0 is written into the address buffer 1 in step S863. On the other hand, when the stamp type is "2" (S860: NO), the name buffer 2 and the address buffer 2 in the RAM 83 are cleared in step S864. Then the contents of the name buffer 0 are written into the name buffer 2 in step S865, and the contents of the address buffer 0 are written into the address buffer 2 in step S866. In this way, the buffers are laid out and the mail editing step is completed.

[0074]

Two name buffers and two address buffers are used because, in this embodiment, the name and address engraving positions within the stamp face area are different, as shown in FIG. 20, depending on whether the stamp type is "1" or "2". When the stamp type is "1", a cartoon character is engraved near the left end of the stamp face area and the name and the address must be

disposed away a certain distance from the left end. On the other hand, when the stamp type is "2", a cartoon character is engraved near the right end of the stamp face area and the name and the address must be disposed away a certain distance from the right end.

[0075]

In this embodiment, the delivery point data is contained in the e-mail transmitted from the host computer 18. Additionally, the delivery point data is retrieved into the output terminal 17a or 17b in step S85. Such a step is not necessarily essential but allows the output terminal 17a or 17b to confirm the stamp delivery point.

[0076]

Then control goes back to step S9 of FIG. 5, where, from among the data edited in step S8, the contents of the stamp type buffer, the contents of the name buffer 1 or 2, whichever is updated more recently, and the contents of the address buffer 1 or 2, whichever is updated more recently are transmitted to the stamp producing device 19a or 19b as the stamp producing data.

[0077]

The stamp producing device 19a or 19b, in turn, receives the stamp producing data from the output terminal 17a or 17b and stores it in the RAM 93. The CPU 91 generates dot matrix data for engraving the stamp face by referring to font data of letters and a cartoon character stored in the ROM 92, based on the stamp producing data stored in the RAM 93, and stores the generated dot matrix data in an image buffer in the RAM 93. Then the stamp 20 (FIG. 22) having a desired engraved stamp face as shown in FIG. 21 is produced by the thermal head 26 and the motors 98 driven based on the dot matrix data.

[0078]

Then in step S10, the stamp 20 is provided to the consumer cash on delivery. In this case, it is preferable that the consumer's cellular phone number is checked to avoid the mismatch between the stamp ordered from the consumer and the stamp to be delivered. It is more preferable that the stamp providing system 1 in this embodiment is provided with an automatic delivery device of produced stamps. An automatic delivery device ejects, in response to payment by the consumer of a prescribed stamp fee and an entry of the consumer's cellular phone number, a stamp corresponding to the entered phone number. Use of such a device can prevent a shop attendant from delivering a wrong stamp to the consumer due to a mistake in checking the phone number.

[0079]

As described above, according to this embodiment, when consumers want to order the stamp 20 having a desired stamp face, all they have to do is to send desired data using the cellular phones 12a, 12b, instead of taking the trouble to go to the installation site of the stamp producing device 19a or 19b and enter data to be engraved in the stamp or fill out an order form. Accordingly, the time and trouble taken by the consumers 11a, 11b to order the stamp 20 can be substantially saved. Also, automatic production of stamps based on the data transmitted from the consumers 11a, 11b substantially saves the stamp provider the trouble of entering the data filled in the order form and enables the stamp provider to receive orders from distant consumers.

[0080]

In this embodiment, the customers 11a, 11b can select a more convenient location as a stamp delivery point from the two locations, and get the stamp 20 at a location relatively near them without the trouble of going to a distant delivery point.

[0081]

Also, in this embodiment, orders from the customers 11a, 11b are centralized in the host computer 18. This allows the customers to just send data to the single host computer 18, without the trouble of selecting one of the output terminals 17a, 17b as a destination of data transmission, which will be a delivery point. As a result, erroneously destined data transmission is prevented. Also, order management can be performed only by the host computer 18.

[0082]

Also, in this embodiment, because stamp producing data is generated and transmitted using the cellular phones 12a, 12b, the consumers 11a, 11b can order a stamp conveniently from various locations, at home and away from home, in their spare time.

[0083]

Also, in this embodiment, because a plurality of cellular phones 12a, 12b can be identified using the phone numbers assigned thereto, the sender's cellular phone can be easily identified from the data received. Additionally, stamps can be produced based on personal information, such as the name and the address of the consumers 11a, 11b.

[0084]

As shown in this embodiment, wireless receivers (preferably cellular phones) are used for the host computer 18 as a data transfer device and for the output terminals 17a, 17b as data receivers. This allows the host computer 18 and the output terminals 17a, 17b to be installed in locations, within the cellular phone service area, where connection with a public line is hardly established. Accordingly, the installation sites of these devices can be selected more freely and the environment for the host computer 18 and the output

terminals 17a, 17b to receive data can be built at a lower cost.

[0085]

Although, in this embodiment, the stamp type together with the name and the address are sent by e-mail to the output terminal 17a or 17b, only the name and the address may be sent by e-mail to the output terminal 17a or 17b and then the stamp type may be designated later when the consumer goes to the site where designs are shown. Such a method is effective when stamp design samples cannot be printed previously in the brochure 101 in FIG. 17 due to frequent stamp design changes. Previous transmission of all the data necessary for producing a stamp from the cellular phone, as shown in the embodiment, allows the consumer to get a stamp with less trouble and waiting time.

[0086]

While the invention has been described in connection with specific embodiments thereof, it should be understood that the invention is not limited to the above-described embodiments and various modifications can be made without departing from the scope of the invention as defined in the claims. For example, if a name card producing device, instead of the stamp producing device, is connected to the output terminal 17a or 17b, a stamp providing system can be configured. Also, CDs (compact discs) in which voice is recorded can be provided using a voice data recorder, or stickers with an image printed thereon can be provided using a device for producing a sticker upon receipt of image data.

[0087]

Although, in the embodiment, the e-mail system where e-mail is automatically sent to the output terminal 17a or 17b from the host computer 18 is described by way of example, another e-mail system can be used, where e-mail is transferred to a mail server separate from the output

terminal 17a or 17b and is received by the output terminal 17a or 17b by access to the mail server. Also, in the above-described embodiments, the number of entry items and the types of the stamp designs can be arbitrarily changed.

[0088]

[Effect of the Invention]

As described above, according to claims 1 and 3, the time and trouble taken by the consumer to order an output can be substantially saved. Also, production of an output based on the data transmitted from the consumer substantially saves an output provider the trouble of entering the data and enables the stamp provider to smoothly receive orders from distant consumers. Because the output producing data is generated and transmitted using a wireless data transmitter, the consumer can order an output conveniently from various locations, at home and away from home, in his/her spare time.

[0089]

The customer can select any one of a plurality of data receivers as a destination of data transfer. When the customer selects the most conveniently located data receiver, the customer can get an output at a location relatively near him/her without the trouble of going to a distant destination.

[0090]

Customer orders are centralized in a single data transfer device. This allows the customer to just send data to a single data transfer device without the trouble of selecting, as required in the system where data is sent to individual data receivers, one of a plurality of data receivers as a recipient. As a result, erroneously destined data transmission is prevented. Also, order management can be performed only by the data transfer device.

[0091]

According to claim 2, because the data receivers are wireless receivers, their installation sites are selected more freely and the environment for the data receivers to receive data can be built at a lower cost.

[Brief Description of the Drawings]

[FIG. 1]

FIG. 1 is a schematic diagram showing a configuration of a stamp providing system according to an embodiment of the invention.

[FIG. 2]

FIG. 2 is a general perspective view of a stamp producing device shown in FIG. 1.

[FIG. 3]

FIG. 3 is a general cross-sectional view of the stamp producing device shown in FIG. 1.

[FIG. 4]

FIG. 4 is a block diagram showing a control system of the stamp providing system according to the embodiment of the invention.

[FIG. 5]

FIG. 5 is a main flowchart showing stamp providing steps in the embodiment of the invention.

[FIG. 6]

FIG. 6 is a flowchart showing an e-mail transfer process in FIG. 5 executed by a host computer.

[FIG. 7]

FIG. 7 is a flowchart of an initialization subroutine in the e-mail transfer process of FIG. 6.

[FIG. 8]

FIG. 8 is a flowchart of a delivery point retrieving subroutine in the e-mail transfer process of FIG. 6.

[FIG. 9]

FIG. 9 is a flowchart of an e-mail transfer subroutine in the e-mail transfer process of FIG. 6.

[FIG. 10]

FIG. 10 is a flowchart showing an e-mail editing process in FIG. 5 executed by an output terminal.

[FIG. 11]

FIG. 11 is a flowchart of an initialization subroutine in the e-mail editing process of FIG. 10.

[FIG. 12]

FIG. 12 is a flowchart of a stamp type retrieving subroutine in the e-mail editing process of FIG. 10.

[FIG. 13]

FIG. 13 is a flowchart of a name retrieving subroutine in the e-mail editing process of FIG. 10.

[FIG. 14]

FIG. 14 is a flowchart of an address retrieving subroutine in the e-mail editing process of FIG. 10.

[FIG. 15]

FIG. 15 is a flowchart of a delivery point retrieving subroutine in the e-mail editing process of FIG. 10.

[FIG. 16]

FIG. 16 is a flowchart of a buffer laying-out subroutine in the e-mail editing process of FIG. 10.

[FIG. 17]

FIG. 17 shows an example of a brochure to be previously supplied to consumers in the embodiment of the invention.

[FIG. 18]

FIG. 18 shows an example of transmission data displayed on a display of a cellular phone.

[FIG. 19]

FIG. 19 shows a screen of mail editing software displayed on a display of the host computer.

[FIG. 20]

FIG. 20 shows a difference, in name and address buffer layouts, between two types of stamp face designs.

[FIG. 21]

FIG. 21 shows an example of a stamp face layout produced according to the embodiment of the invention.
[FIG. 22]

FIG. 22 is an external perspective view of a stamp produced according to the embodiment of the invention.

[Description of the Reference Numerals]

- 1 stamp providing system
- 11a, 11b customers
- 12a, 12b cellular phones
- 13a, 13b, 13c base stations
- 14 cellular phone switching station
- 15 cellular phone
- 16a, 16b cellular phone
- 17a, 17b output terminals
- 18 host computer
- 19a, 19b stamp producing device
- 20 stamp

[Title of the Document] Drawings

[FIG. 1]

[Document Name] Abstract

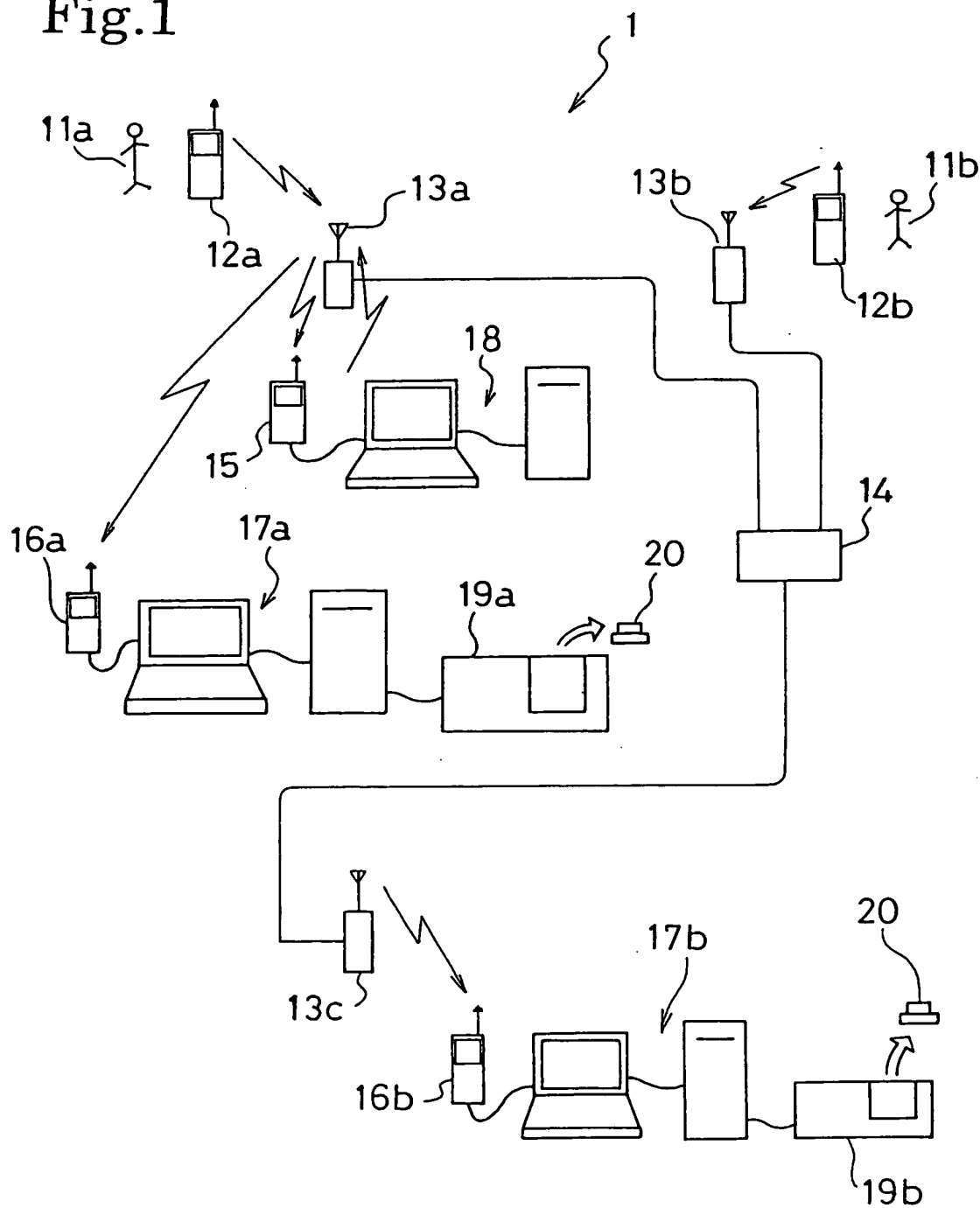
[Abstract]

[Problem to be Solved] To enable customers to order a tangible output, such as a name card and a stamp, at less expense in time and trouble.

[Solution] Customers 11a, 11b operate their own cellular phones 12a, 12b to send information to be engraved in a stamp in the form of e-mail to a host computer 18. The host computer 18 transfers the information to the output terminal 17a or 17b, whichever is desired by the customers. The output terminal 17a or 17b edits the e-mail and send stamp producing data to a stamp producing device 19a or 19b. The stamp producing device 19a or 19b produces a stamp 20 based on the received data.

[Selected Figure] FIG. 1

Fig.1



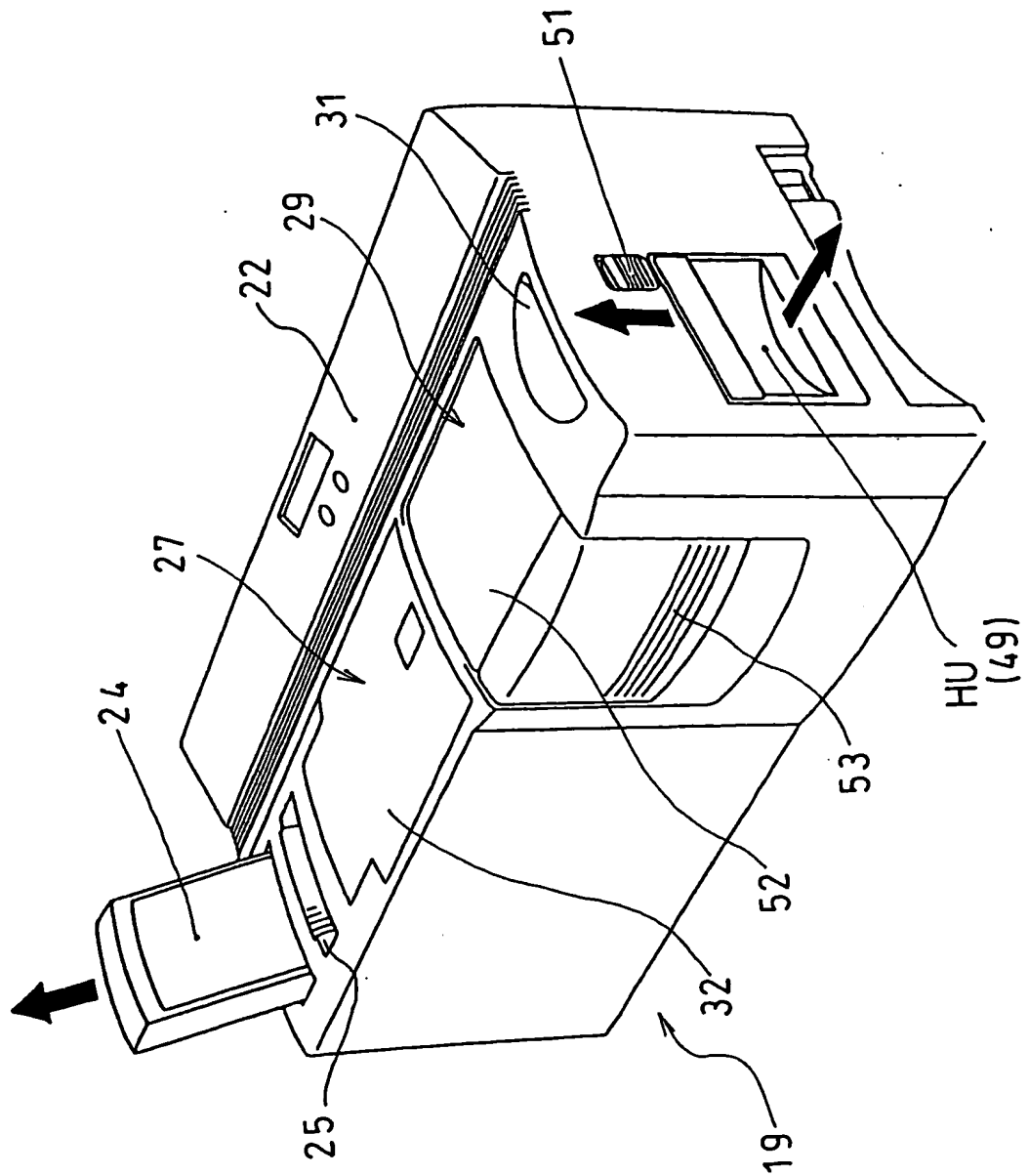


Fig. 2

HU (49)

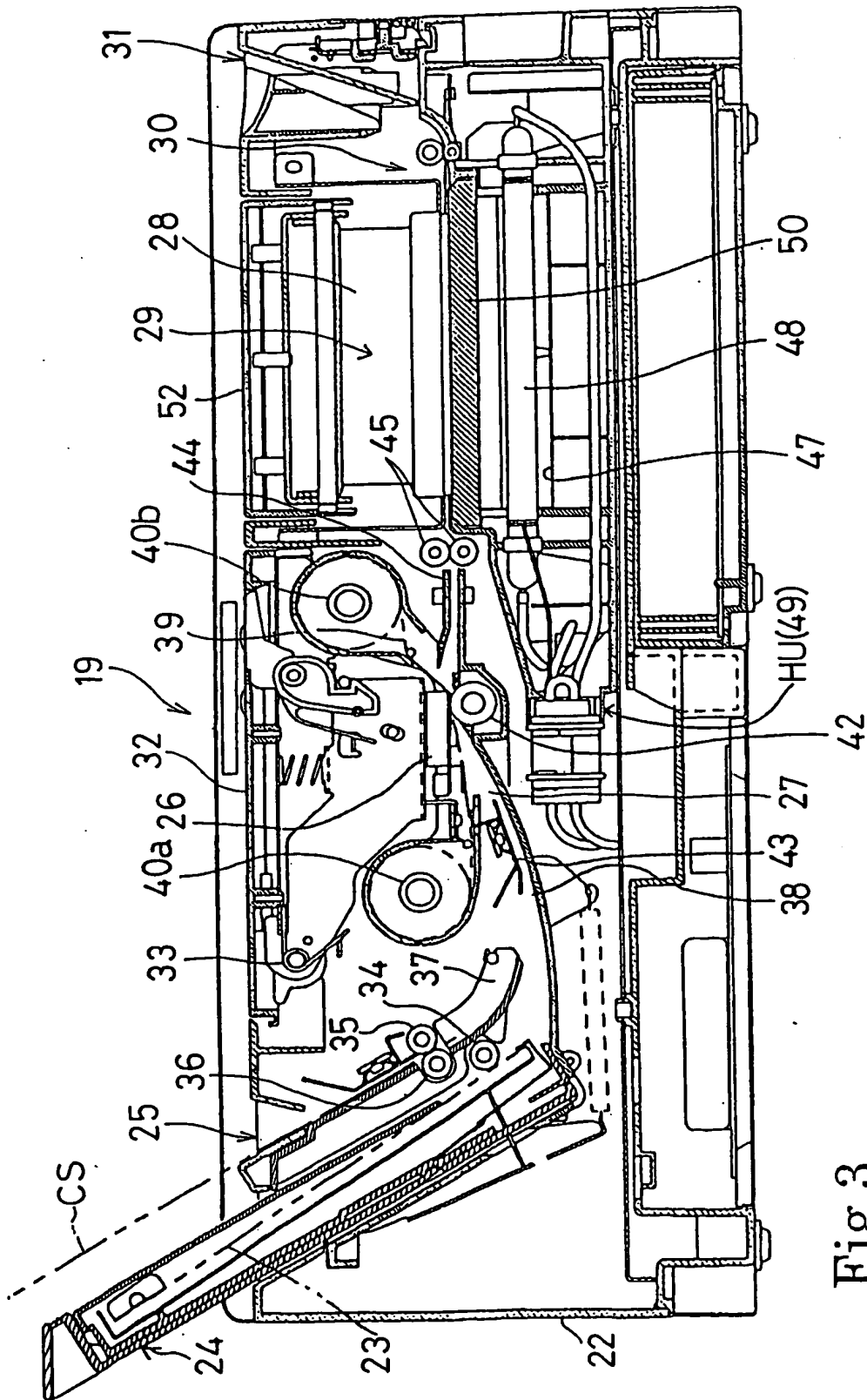


Fig. 3

Fig. 4

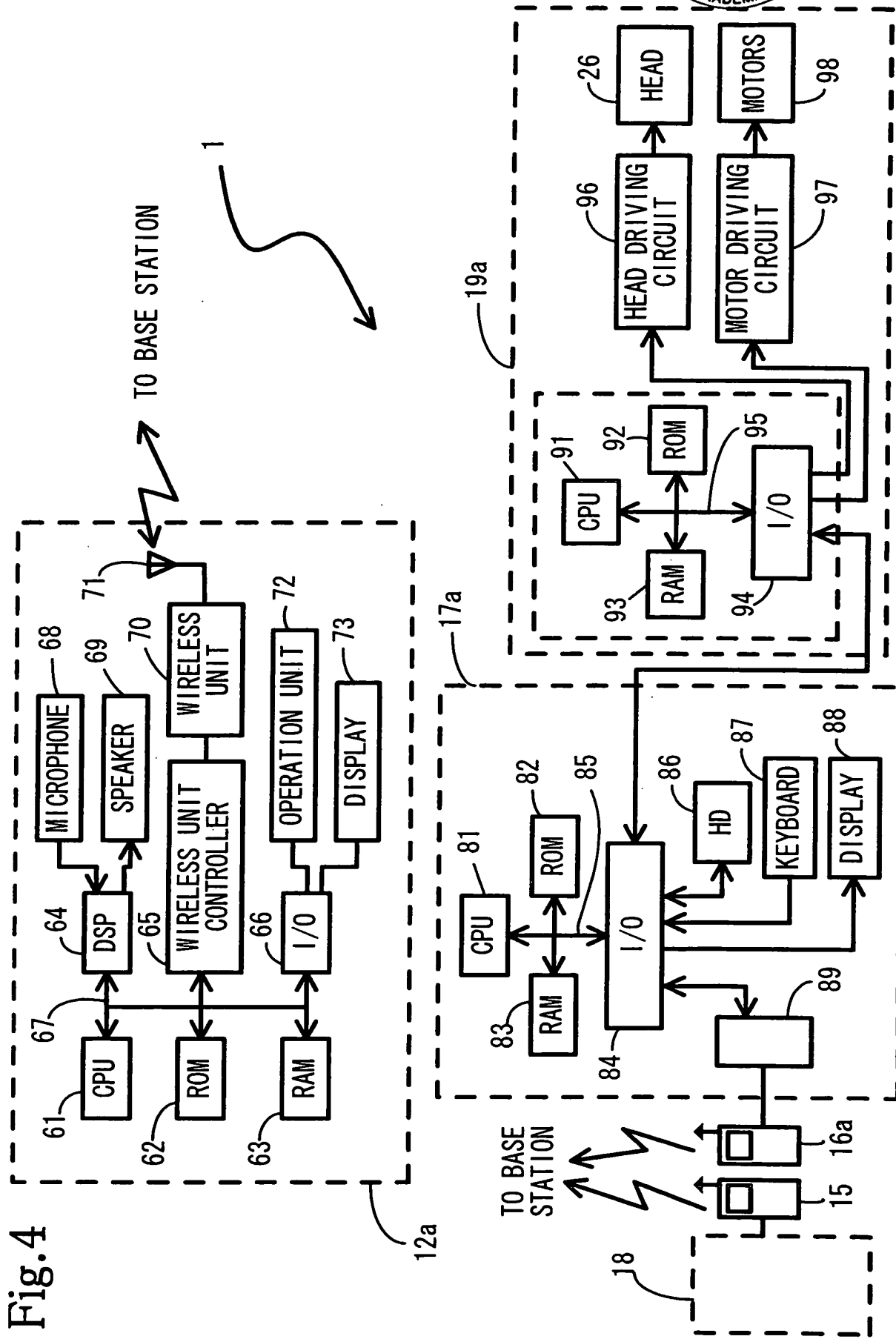


Fig.5

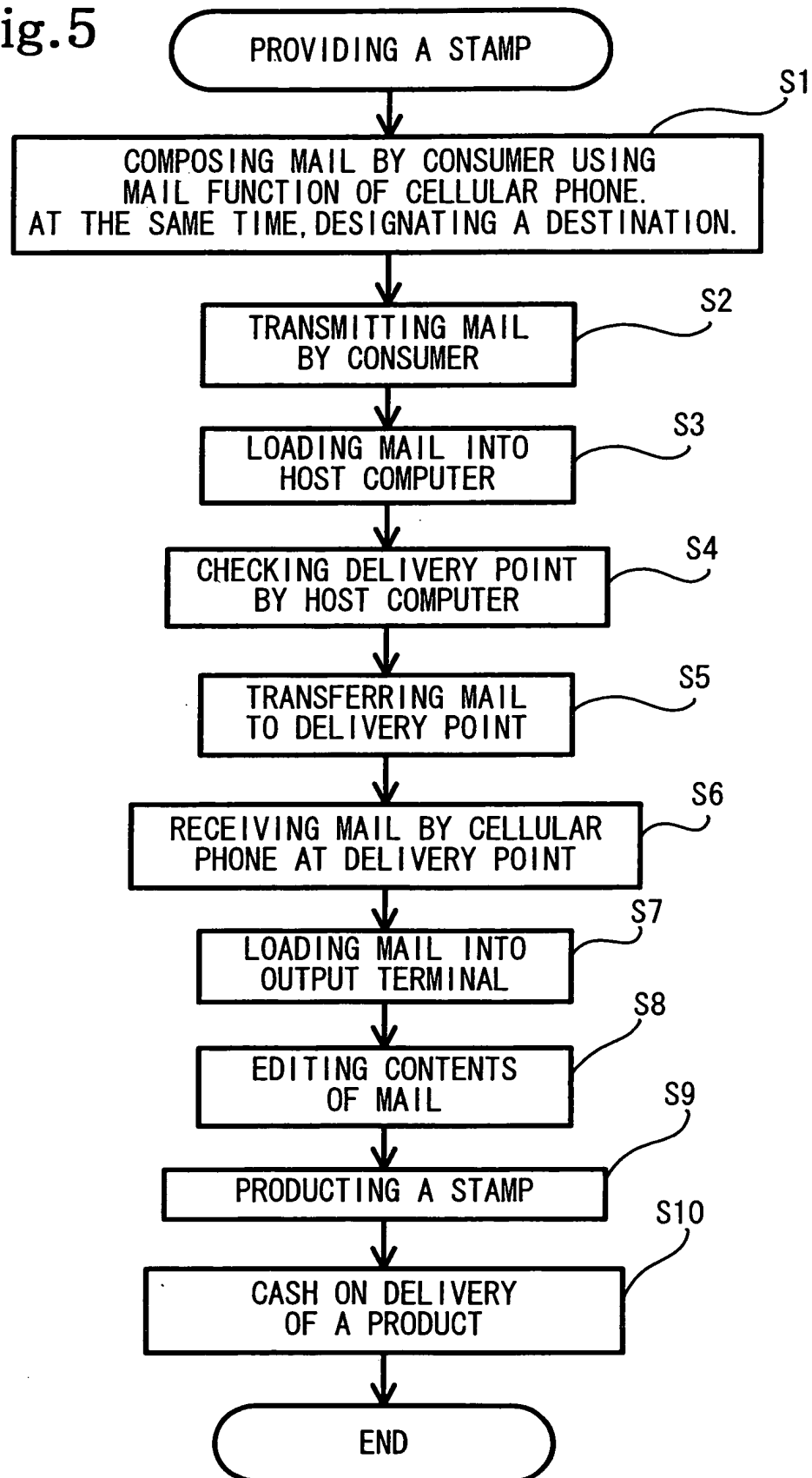


Fig.6

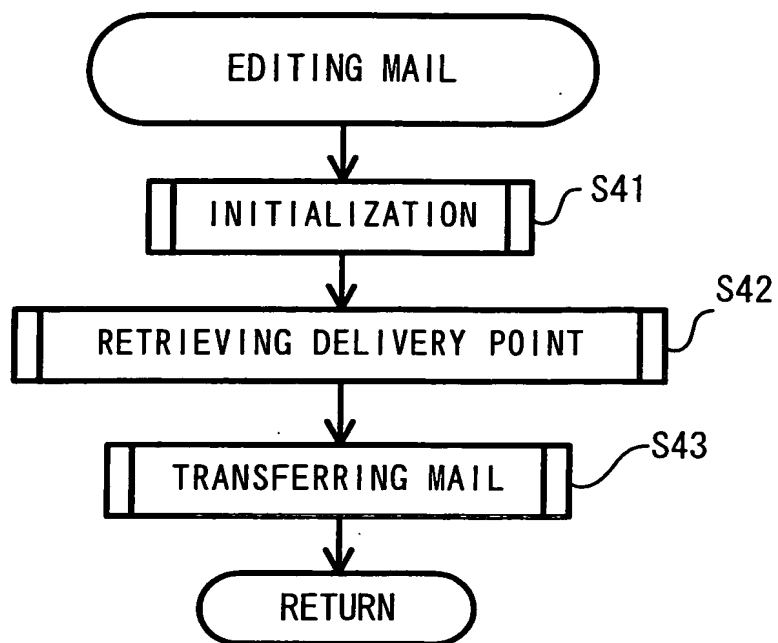


Fig.7

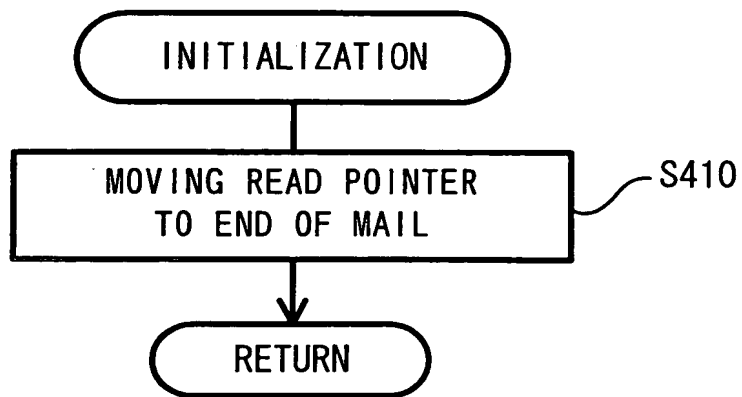


Fig.8

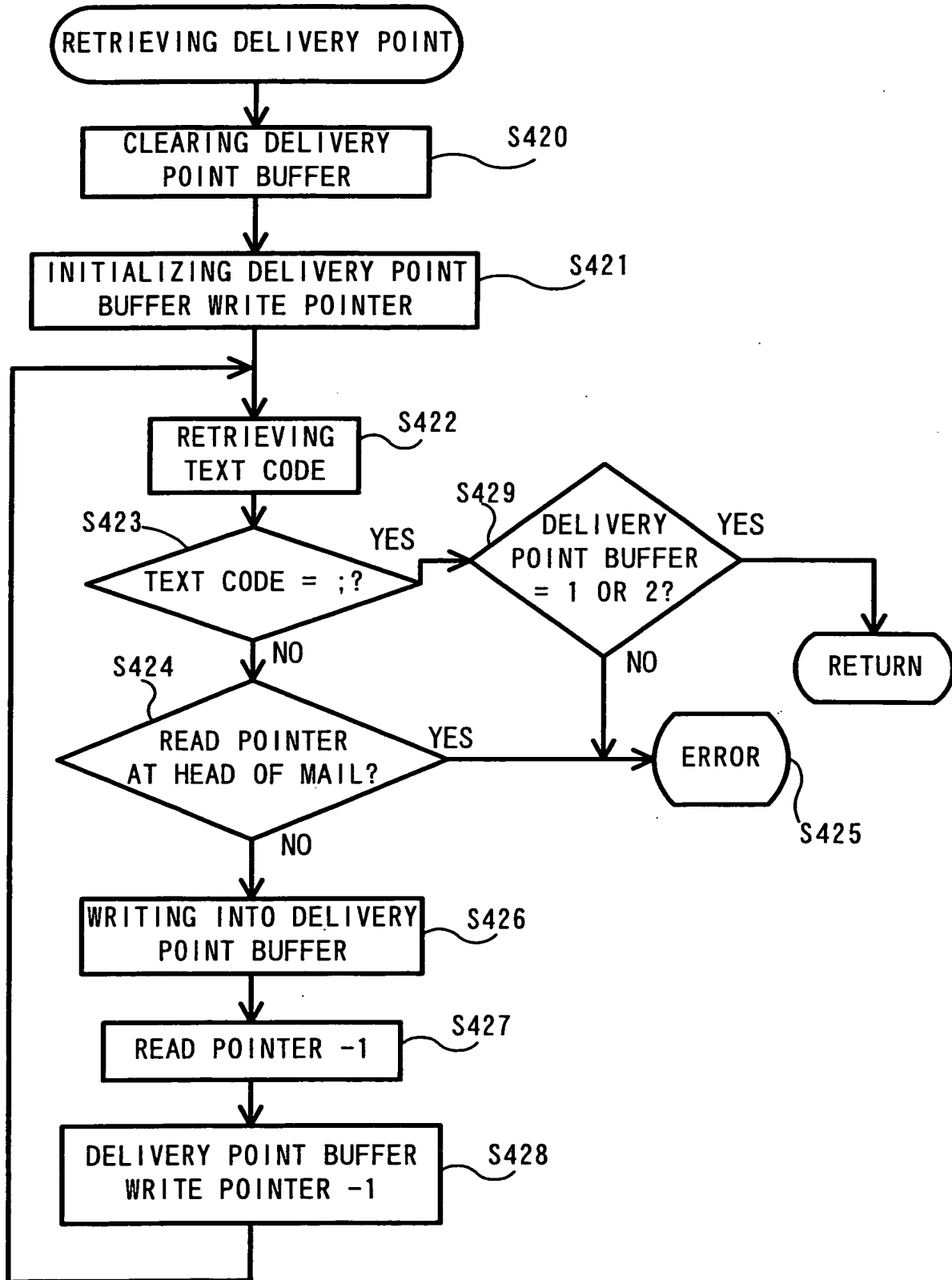


Fig.9

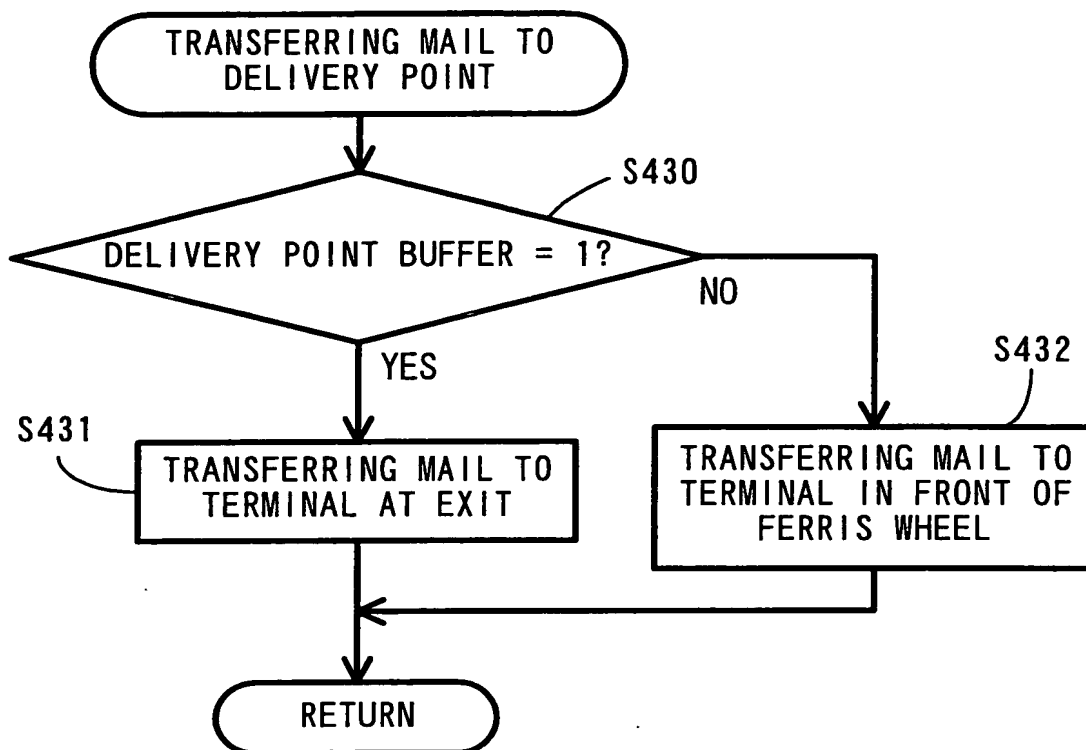


Fig.10

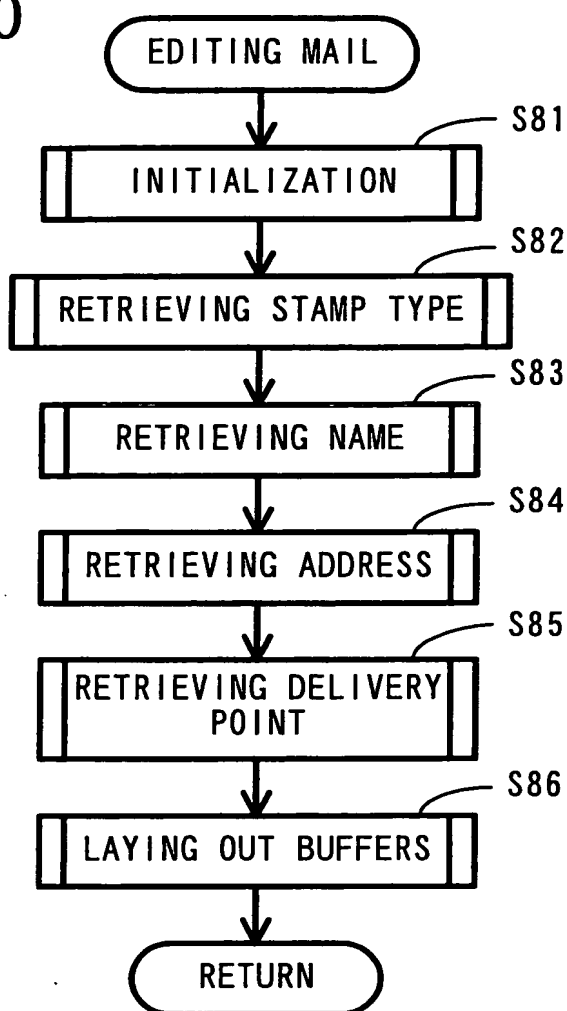


Fig.11

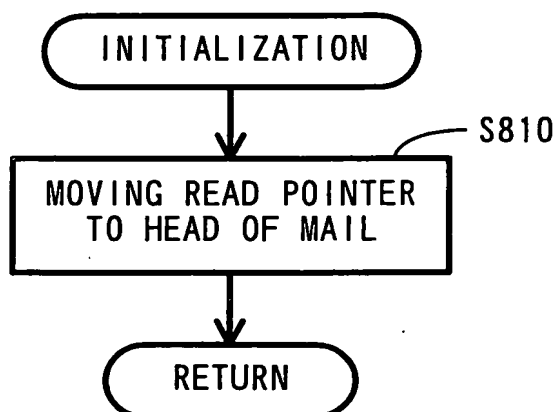


Fig.12

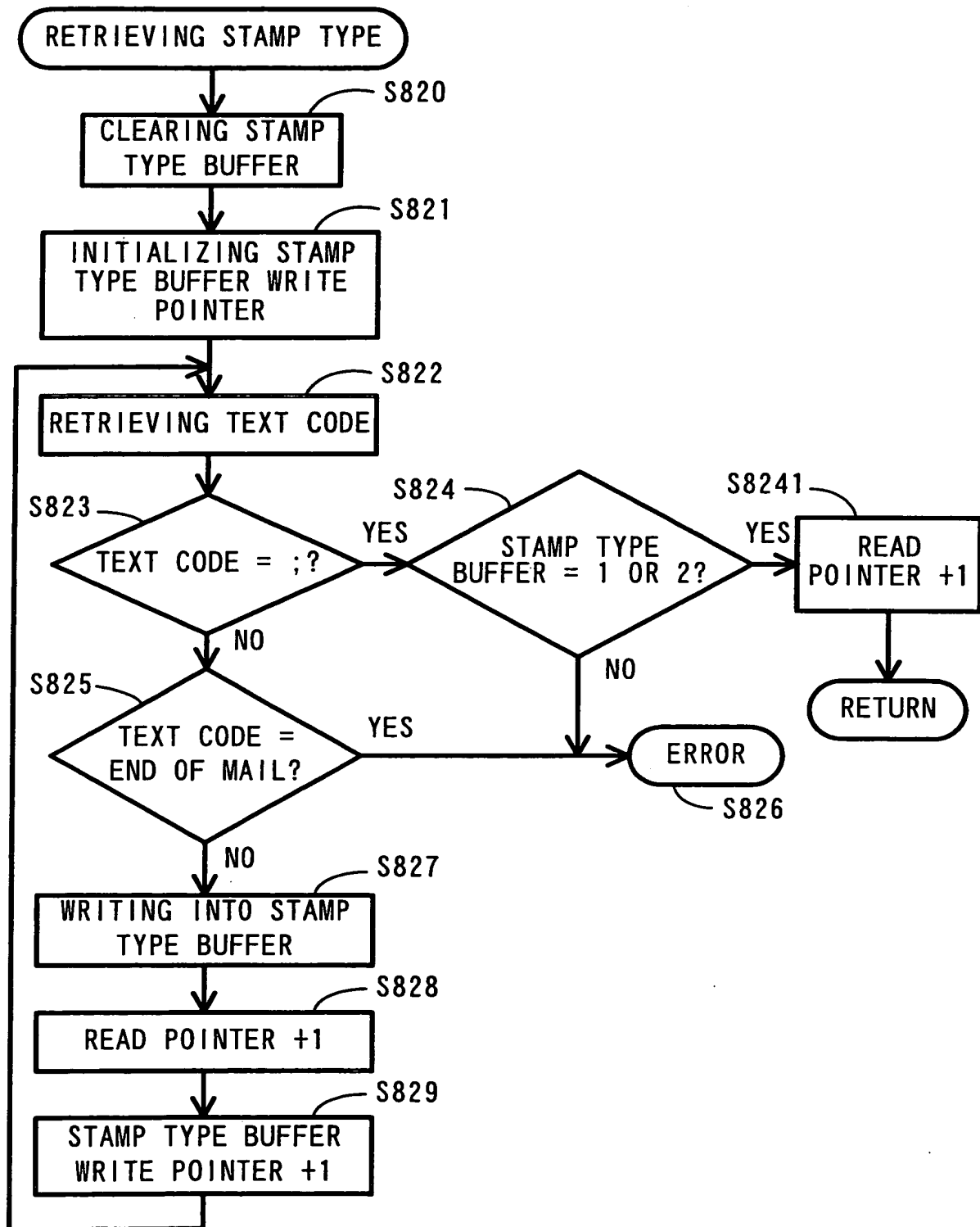


Fig.13

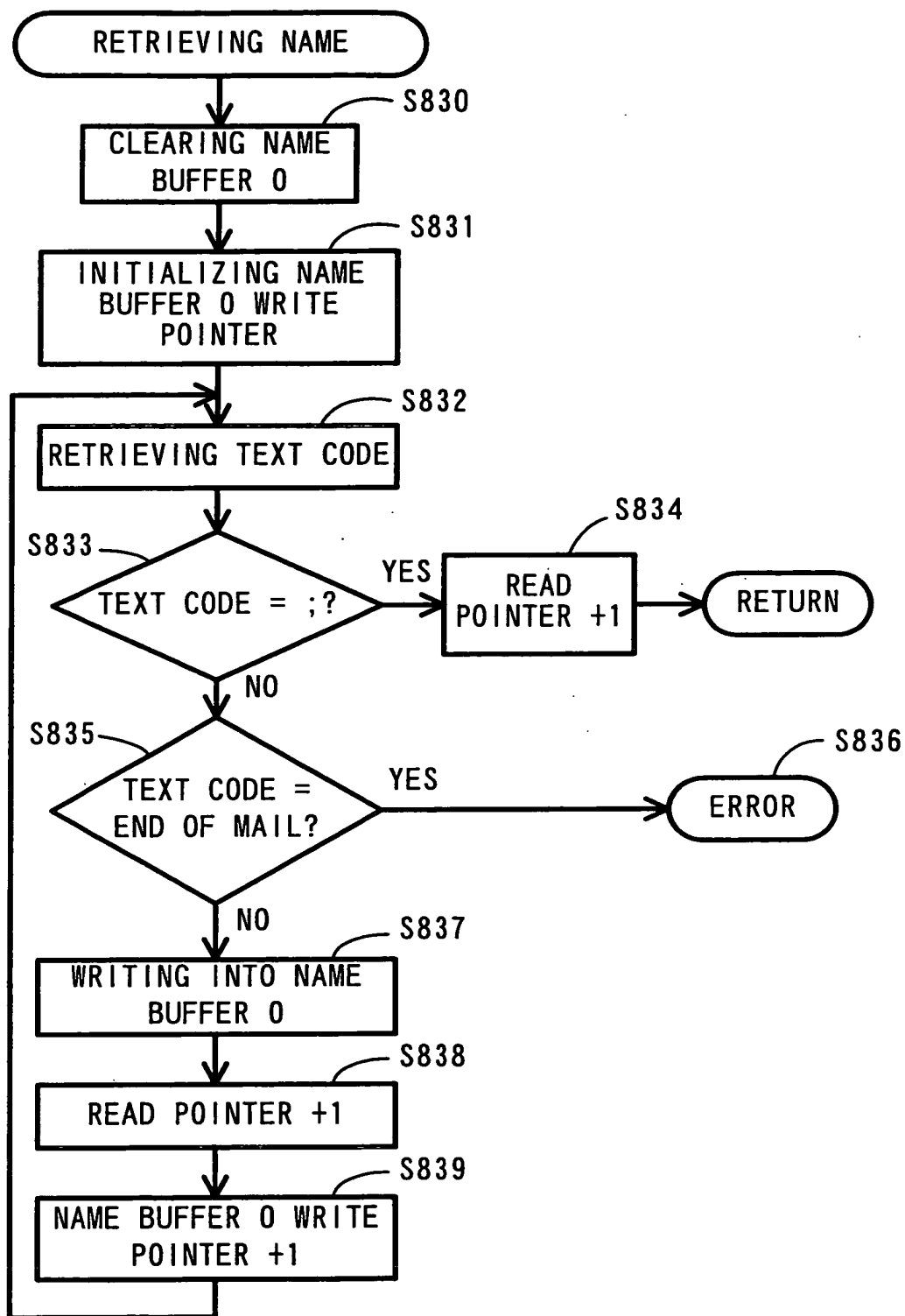


Fig.14

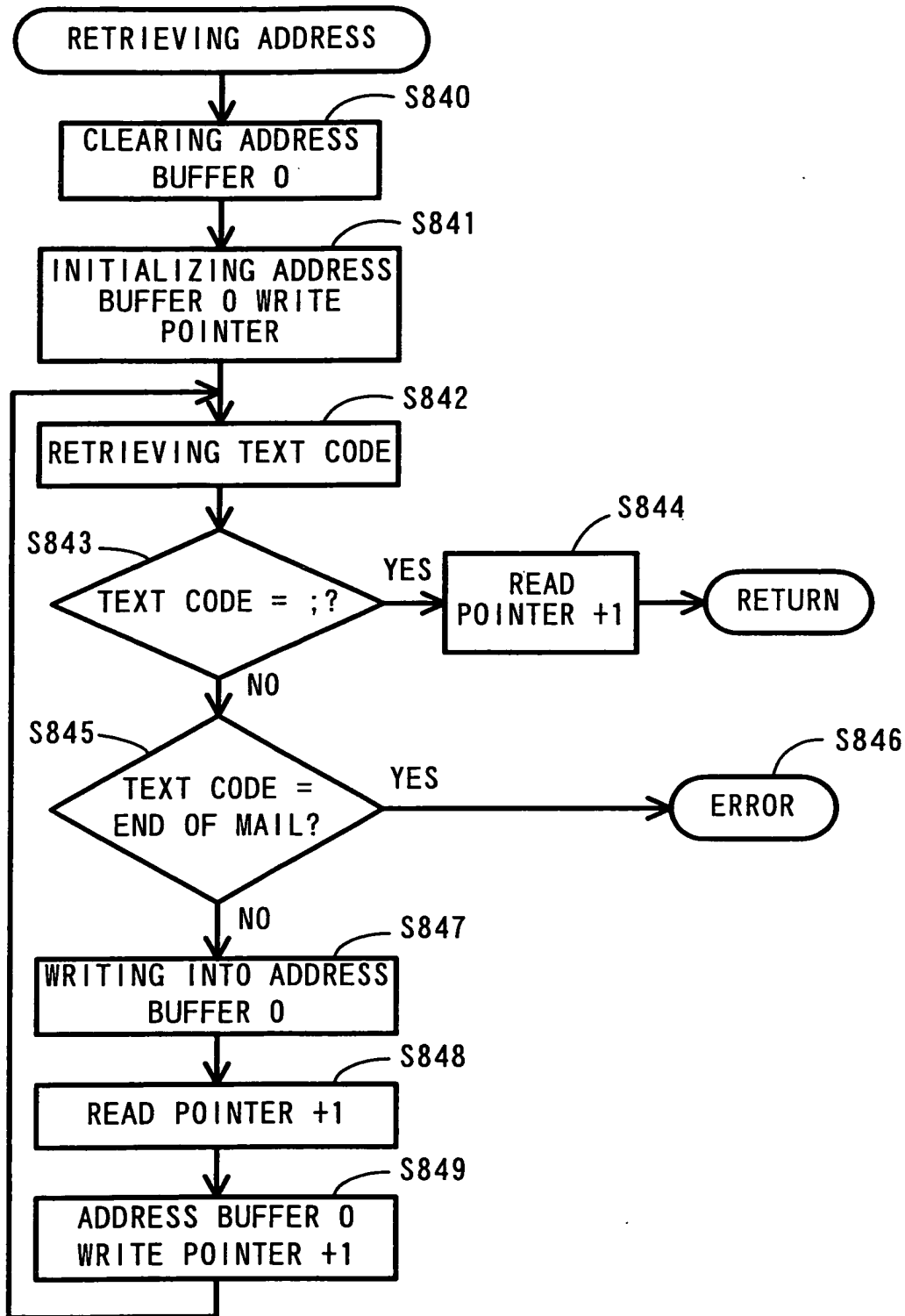


Fig.15

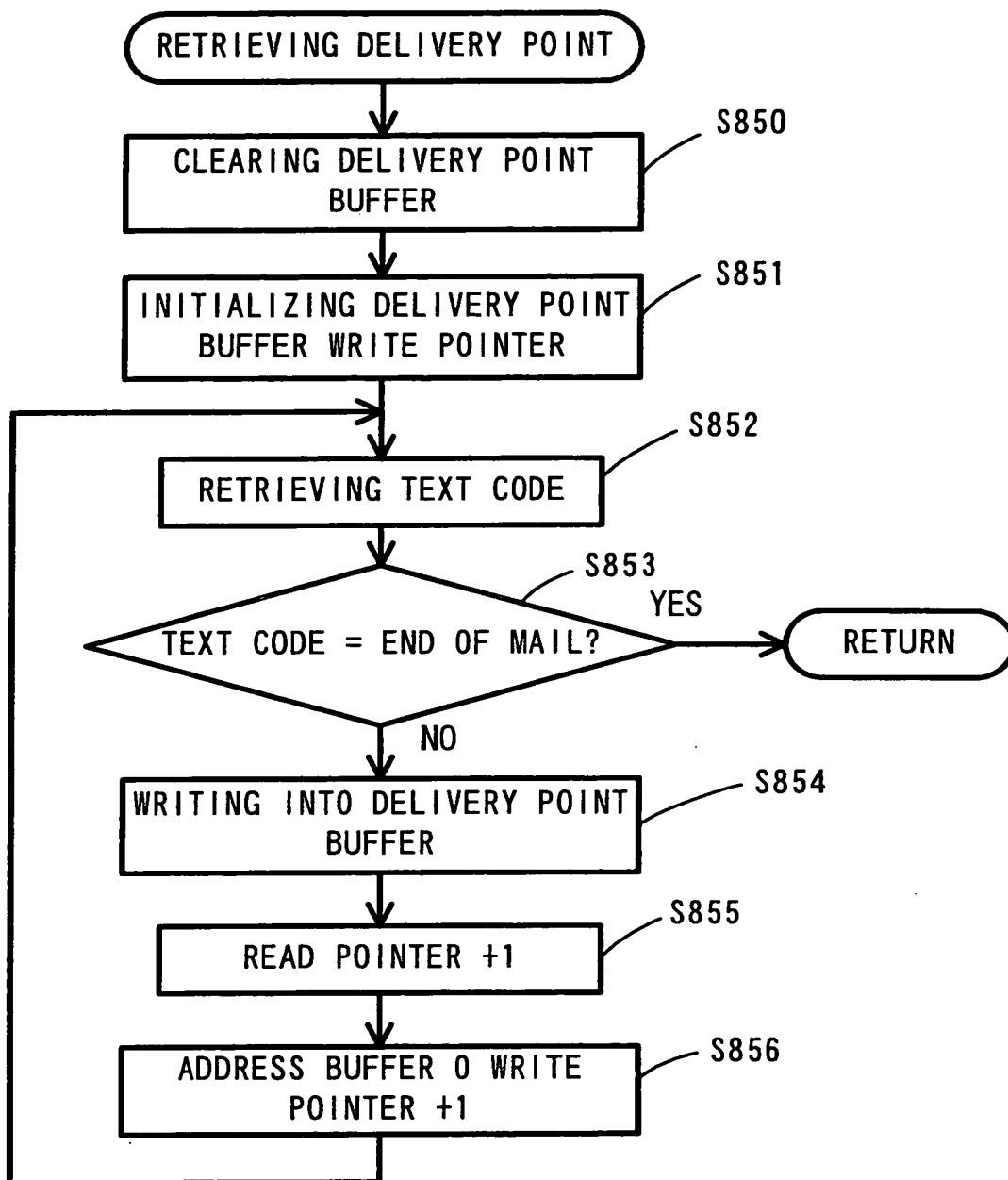


Fig.16

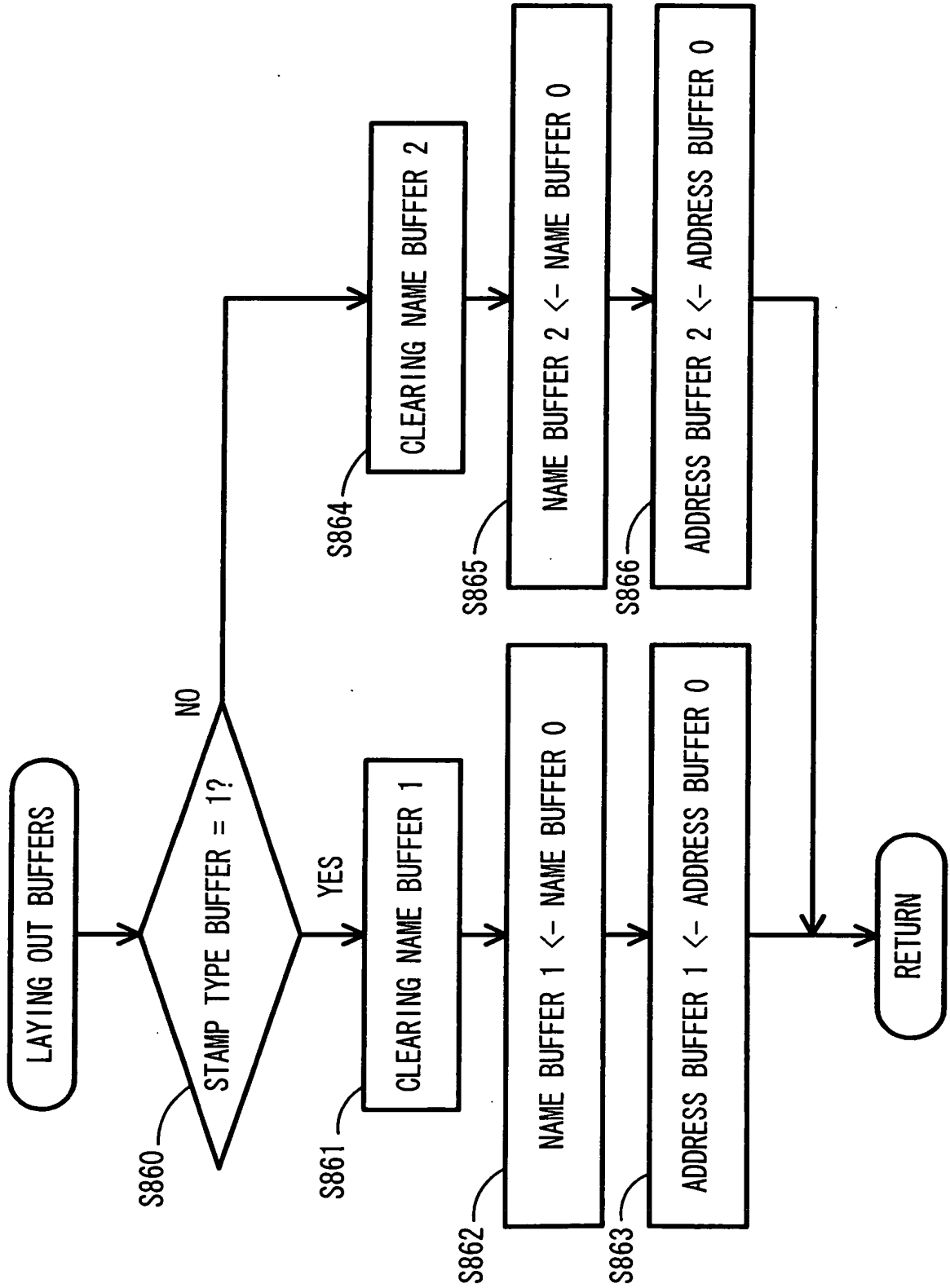


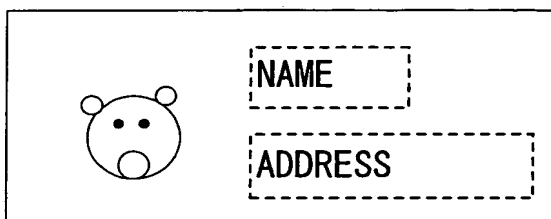
Fig. 17

101

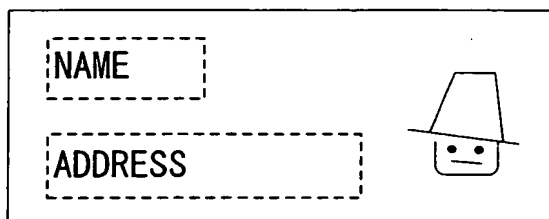
HOW TO WRITE MAIL TO ORDER A STAMP

Enter the stamp type, name, and address in this order by delimiting each entry item by semicolon.

STAMP 1



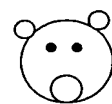
STAMP 2



EXAMPLE OF ENTRY:

1; TARO SUZUKI;
1-2-3 XX,
^^-KU, NAGOYA

If mailed,



TARO SUZUKI

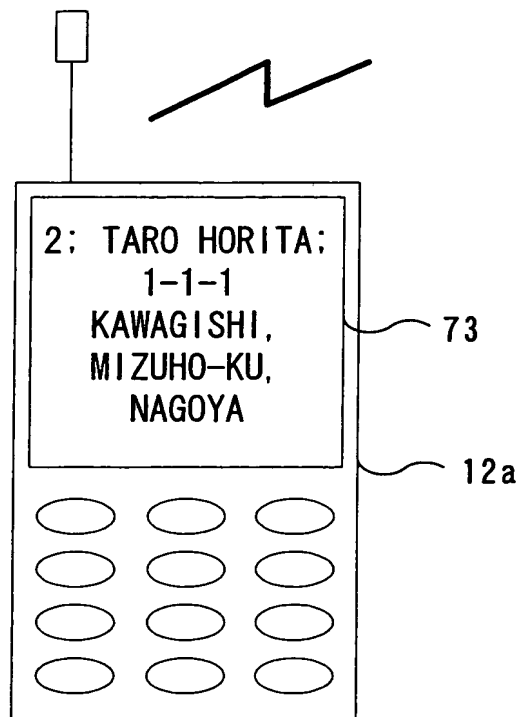
1-2-3 XX, ^^ -KU, NAGOYA

Your stamp will be:

Please send your mail to: 090-1234-5678



Fig. 18



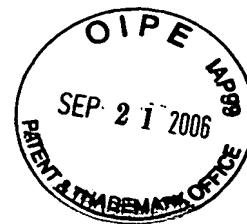


Fig. 19

MAIL EDITING SOFTWARE			
No.	TITLE	TEL	DELIVERY POINT
1	STAMP ORDER	090-7777-8888	1
2			
3			
4			
5			

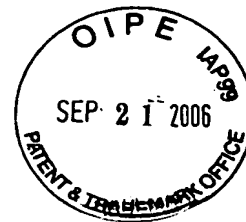
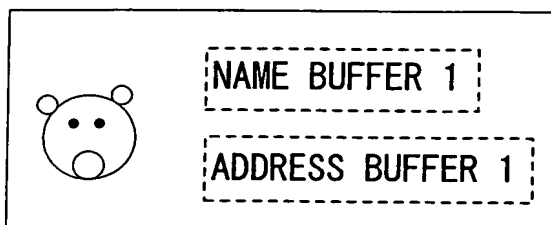


Fig. 20

STAMP 1



STAMP 2

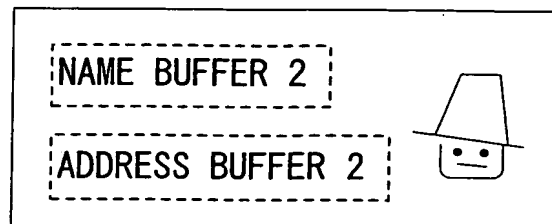


Fig. 21

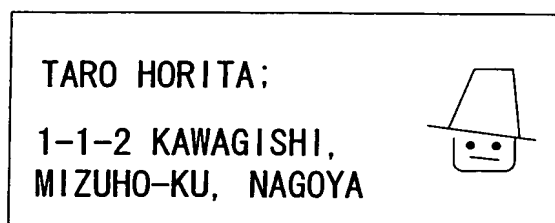


Fig. 22

